AirStream™ 42BHE,BVE06-40 System Fan Coil Air Conditioners

Installation, Start-Up and Service Instructions

CONTENTS

	Page
SAFETY CONSIDERATIONS	1
INTRODUCTION	1,2
INSTALLATION	2-16
Step 1 — Unpack and Inspect Unit	2
Step 2 — Protect Unit from Damage	2
Step 3 — Prepare Jobsite	2
Step 4 — Prepare Unit	8
Step 5 — Position Unit	8
Step 6 — Make Piping Connections	11
Step 7 — Make Electrical Connections	13
Step 8 — Make Duct Connections	14
Step 9 — Install Mixing Box	14
Step 10 — Make Final Preparations	15
START-UP	16
Air System Balancing	16
SERVICE	16
Clean Coils	16
Check Drain	16
Fan and Motor Bearings	16
Align Pulley	16
Adjust Fan Belt Tension	16
Clean Fan Wheel	16
Clean or Replace Air Filters	16
Recommended Maintenance	16
TROUBLESHOOTING	17
Excessive Condensation on Fan Coil Unit Parts	17
Motor Overload	17
START-UP CHECKLIST	CL-1,CL-2

SAFETY CONSIDERATIONS

Air-handling equipment is designed to provide safe and reliable service when operated within design specifications. To avoid injury to personnel and damage to property or equipment, use good judgment and follow safe practices as outlined below when installing and operating this equipment.

⚠ DANGER

NEVER REACH INTO a unit while the fan is running.

LOCK OPEN AND TAG the fan motor power disconnect switch before working on unit. In addition, remove the fuses and take them with you after noting this on tag.

DISCONNECT ALL POWER before attempting any installation or service. More than one power source may be supplied to a unit. Power to remote mounted control devices may not be supplied through the unit.

CHECK THE WEIGHT of assembly and components to be sure that rigging equipment can handle them safely.

NEVER PRESSURIZE a coil with a non-liquid for leak testing. A dangerous burst may occur.

DO NOT STEAM CLEAN coils until you are sure all personnel are clear of the area.

Failure to follow these warnings will result in severe personal injury or death.

INTRODUCTION

The following contains general installation instructions for the 42BHE,BVE fan coil units. See Fig. 1 for components. Refer to the unit wiring diagram installed on the blower housing or specific manufacturer literature for any other type of factory-mounted controls.

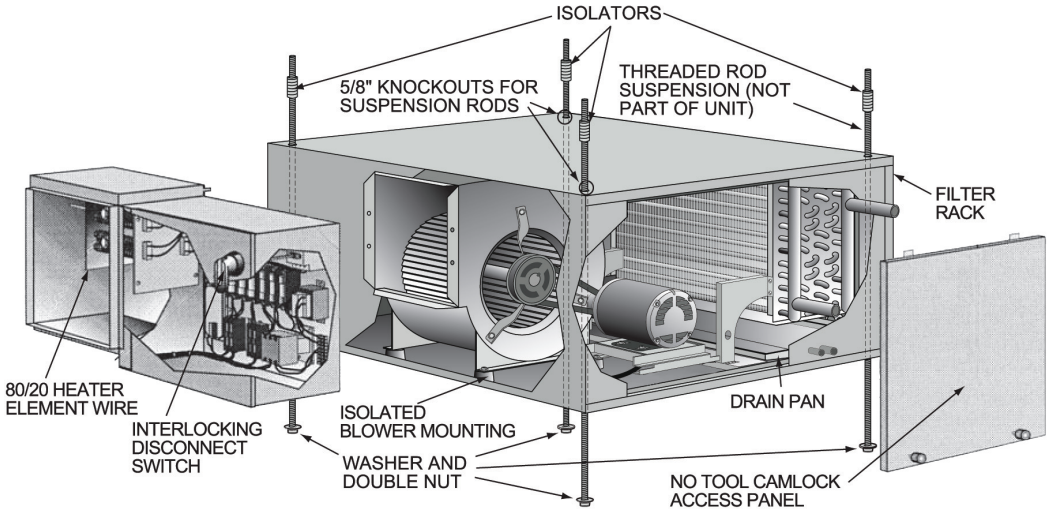


Fig. 1 — Component Identification (42BHE Units Shown)

See drawings for unit configurations, dimensions, clearances, and pipe connections. Refer to unit wiring label for all electrical connections. Follow NEC (National Electrical Code) and local codes.

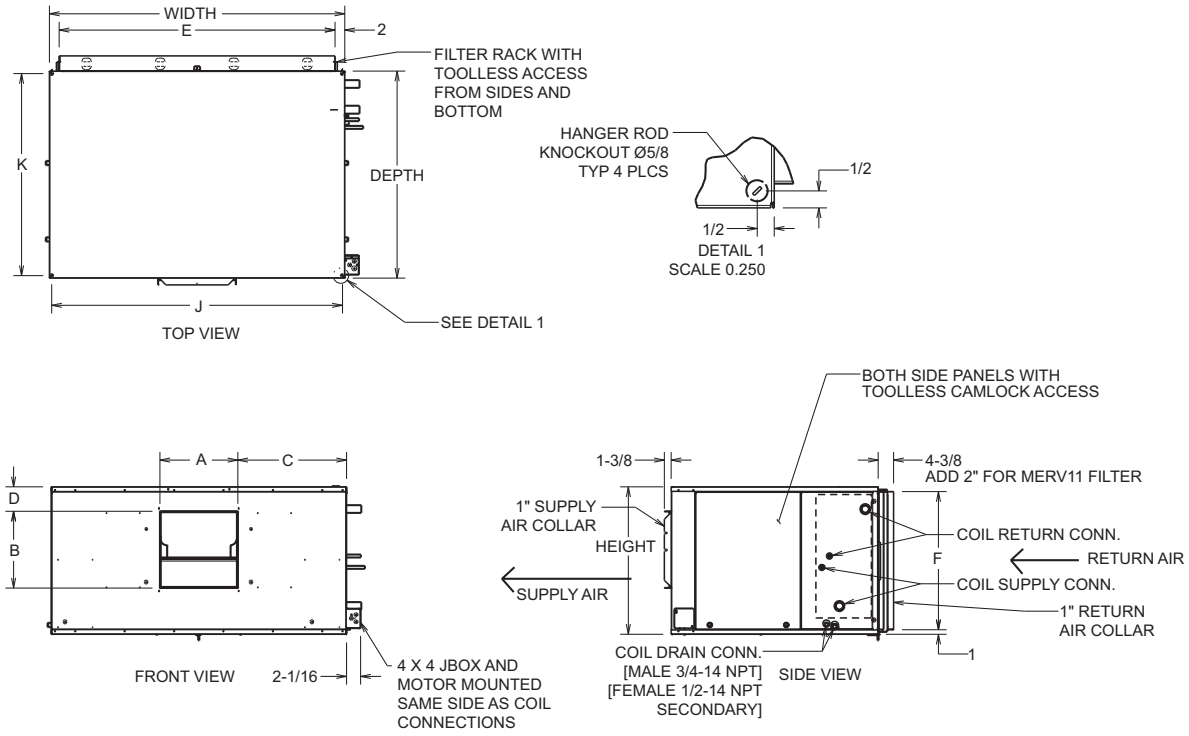
INSTALLATION

Step 1 — Unpack and Inspect Unit — Remove shipping wraps from unit and check shipment against shipping list. Check for concealed shipping damage. If shipment is damaged or incomplete, file claim with transportation company and contact your local Carrier representative immediately.

Step 2 — Protect Unit from Damage — To maintain warranty, protect unit against adverse weather conditions, theft or vandalism on the jobsite.

The described equipment **IS NOT** suitable for outdoor installations. The equipment should never be stored or installed where it may be subjected to a hostile environment such as rain, snow, or extreme temperatures.

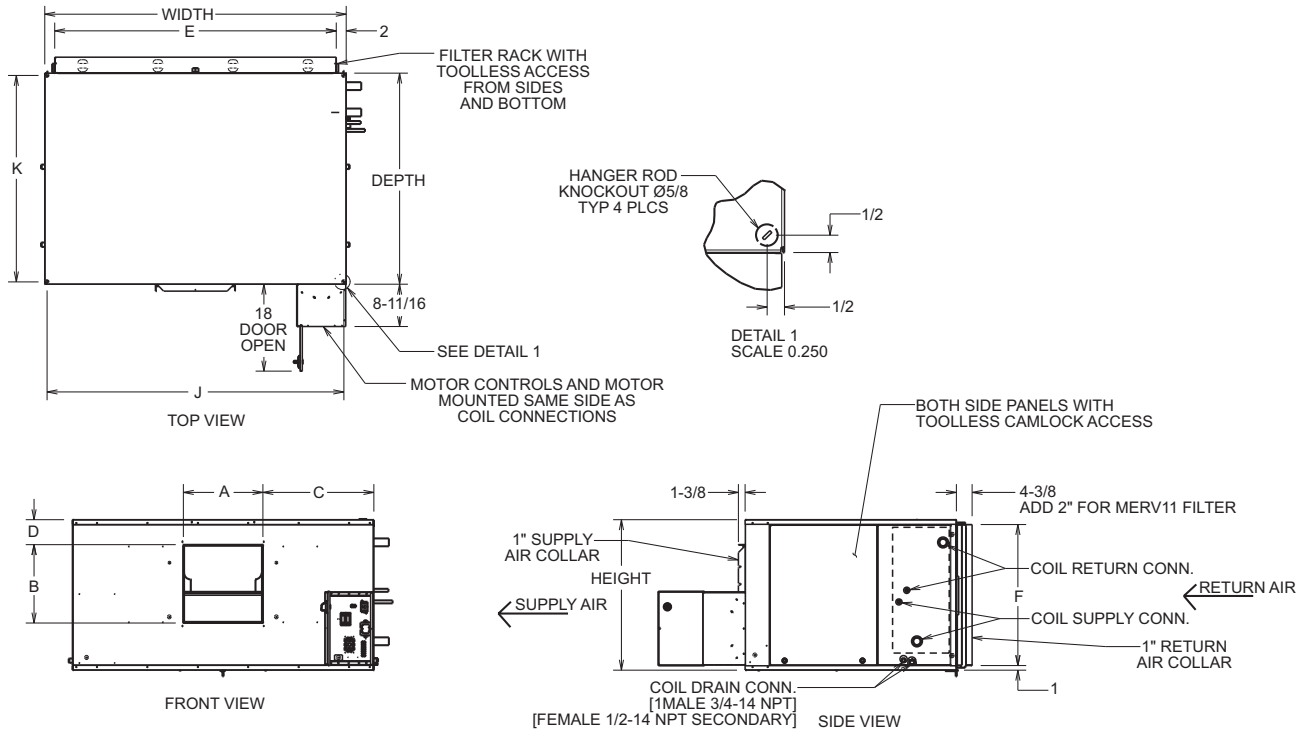
Step 3 — Prepare Jobsite — To save time and to reduce the possibility of costly errors, set up a complete sample installation in a typical room at jobsite. Check all critical dimensions such as pipe, wire and duct connection requirements. Refer to job drawings and product dimension drawings as required. Instruct all trades in the appropriate part of the installation. For unit component identification, refer to Fig. 1. For unit dimensions, refer to Fig. 2-4 for 42BHE units. Refer to Fig. 5-7 for 42BVE units.



UNIT 42BHE	DIMENSIONS (in.)											
	Fan Size	Depth	Width	Height	Supply Duct				Return Duct		Mounting Holes	
					A	B	C	D	E	F	J	K
06	9 x 4	36	28	19 3/4	7 1/8	10 1/2	14 1/2	2 1/4	24	16 1/2	27 1/4	35 1/4
08	9 x 6	36	28	19 3/4	8 1/2	10 1/2	13 7/8	2 1/4	24	16 1/2	27 1/4	35 1/4
10	10 x 4	37 1/2	37	21 1/2	7 1/8	11 5/8	15 1/4	2 1/4	33	18 1/4	36 1/4	37
12	10 x 7	37 1/2	37	21 1/2	10	11 5/8	13 7/8	2 1/4	33	18 1/4	36 1/4	37
16	11 x 10	37 3/4	47	21 1/2	13 3/8	12 3/4	16 3/4	2 1/4	43	18 1/4	46 1/4	37
20	12 x 9	40 1/4	48	24	12 1/2	13 3/4	17 3/4	2 1/4	44	20 3/4	47 1/4	39 1/2
30	12 x 12	40 1/4	48	32 1/4	15 7/8	13 3/4	16	7 1/4	44	29	47 1/4	39 1/2
40	15 x 12	43 1/2	62	32 1/4	16 1/2	16 1/8	22 3/4	6 1/4	58	29	61 3/4	42 1/2

NOTES:
1. All dimensions are in inches (±1/4 in.).
2. Any modifications to product specifications by any person are subject to acceptance of the factory. Product specifications are subject to change without notice.
3. Right hand shown, left hand opposite.
4. Hanger rods, which are field-supplied, are shown for reference only.
5. Control box size and position may vary.
6. "C" dimension is measured from coil side of the unit.

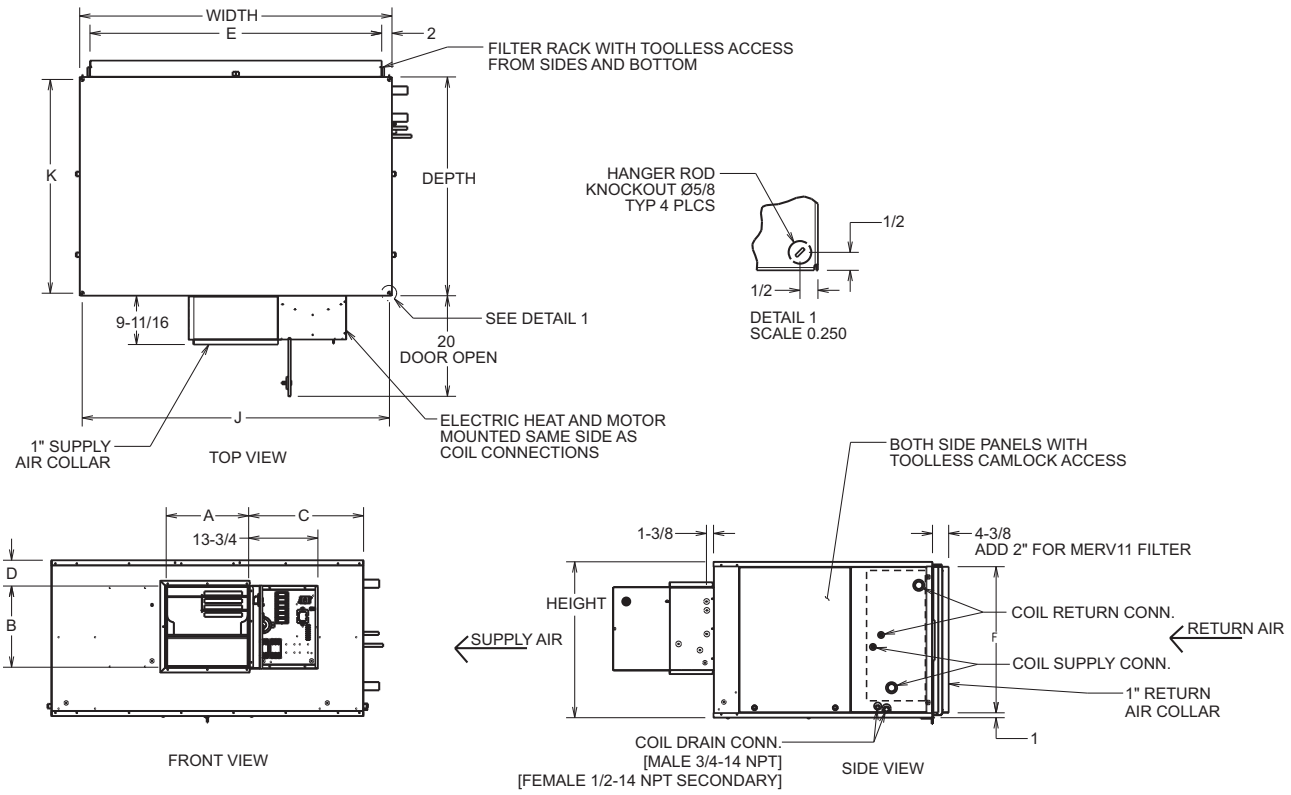
Fig. 2 — Unit Dimensions — 42BHE Fan Coil Base Unit (No Controls)



UNIT 42BHE	DIMENSIONS (in.)											
	Fan Size	Depth	Width	Height	Supply Duct				Return Duct		Mounting Holes	
					A	B	C	D	E	F	J	K
06	9 x 4	36	28	19 3/4	7 1/8	10 1/2	14 1/2	2 1/4	24	16 1/2	27 1/4	35 1/4
08	9 x 6	36	28	19 3/4	8 1/2	10 1/2	13 7/8	2 1/4	24	16 1/2	27 1/4	35 1/4
10	10 x 4	37 1/2	37	21 1/2	7 1/8	11 5/8	15 1/4	2 1/4	33	18 1/4	36 1/4	37
12	10 x 7	37 1/2	37	21 1/2	10	11 5/8	13 7/8	2 1/4	33	18 1/4	36 1/4	37
16	11 x 10	37 3/4	47	21 1/2	13 3/8	12 3/4	16 3/4	2 1/4	43	18 1/4	46 1/4	37
20	12 x 9	40 1/4	48	24	12 1/2	13 3/4	17 3/4	2 1/4	44	20 3/4	47 1/4	39 1/2
30	12 x 12	40 1/4	48	32 1/4	15 7/8	13 3/4	16	7 1/4	44	29	47 1/4	39 1/2
40	15 x 12	43 1/2	62	32 1/4	16 3/8	16 1/8	22 3/4	6 1/4	58	29	61 3/4	42 1/2

NOTES:
1. All dimensions are in inches (±1/4 in.).
2. Any modifications to product specifications by any person are subject to acceptance of the factory. Product specifications are subject to change without notice.
3. Right hand shown, left hand opposite.
4. Hanger rods, which are field-supplied, are shown for reference only.
5. Control box size and position may vary.
6. “C” dimension is measured from coil side of the unit.

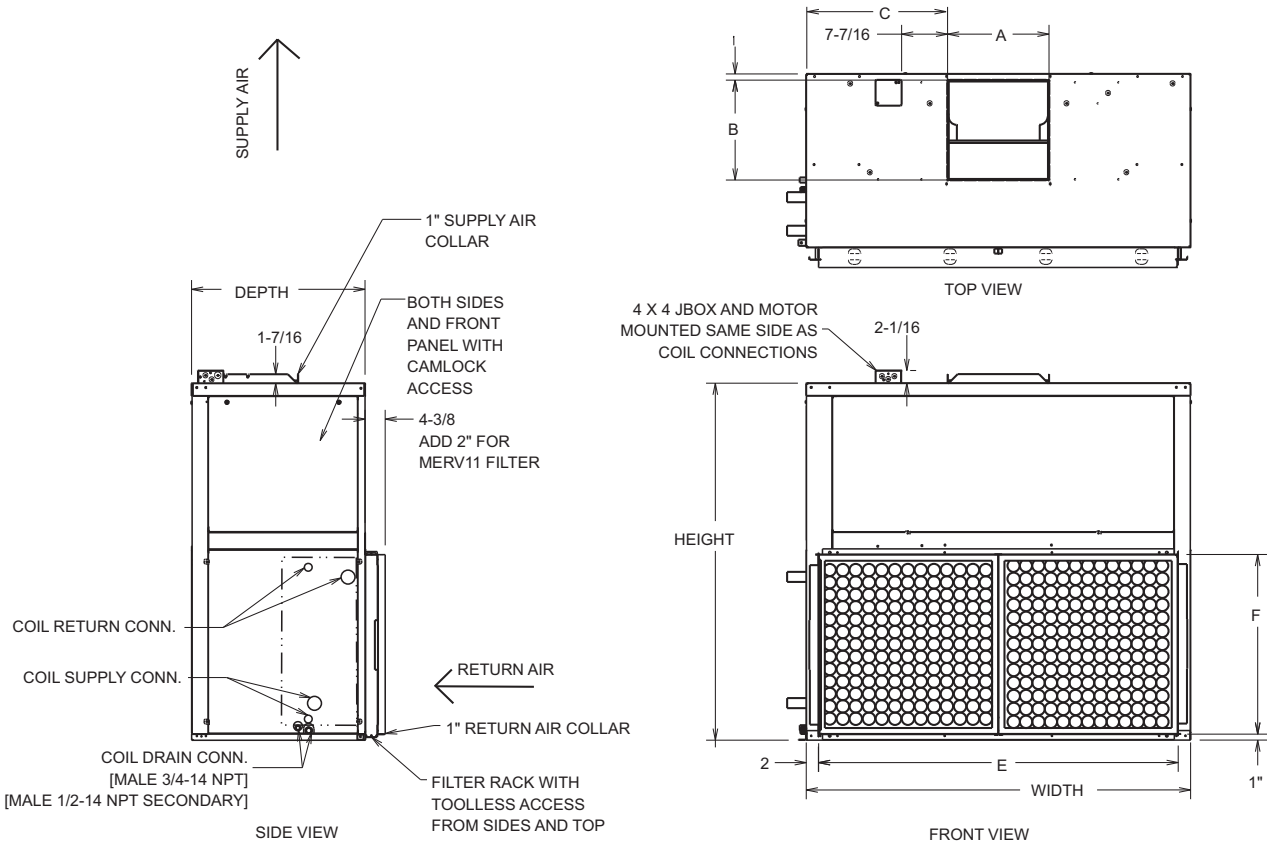
Fig. 3 — Unit Dimensions — 42BHE Fan Coil Base Unit with Motor Control Option



UNIT 42BHE	DIMENSIONS (in.)											
	Fan Size	Depth	Width	Height	Supply Duct				Return Duct		Mounting Holes	
					A	B	C	D	E	F	J	K
06	9 x 4	36	28	19 3/4	8 7/8	10 1/2	14 1/2	2 1/4	24	16 1/2	27 1/4	35 1/4
08	9 x 6	36	28	19 3/4	8 7/8	10 1/2	13 7/8	2 1/4	24	16 1/2	27 1/4	35 1/4
10	10 x 4	37 1/2	37	21 1/2	10 3/8	11 5/8	15 1/4	2 1/4	33	18 1/4	36 1/4	37
12	10 x 7	37 1/2	37	21 1/2	10 3/8	11 5/8	13 7/8	2 1/4	33	18 1/4	36 1/4	37
16	11 x 10	37 3/4	47	21 1/2	13 7/8	12 3/4	16 3/4	2 1/4	33	18 1/4	46 1/4	37
20	12 x 9	40 1/4	48	24	13	13 3/4	17 3/4	2 1/4	44	20 3/4	47 1/4	39 1/2
30	12 x 12	40 1/4	48	32 1/4	16 1/4	13 3/4	16	7 1/4	44	29	47 1/4	39 1/2
40	15 x 12	43 1/2	62	32 1/4	16 3/4	16 1/8	22 3/4	6 1/4	58	29	61 3/4	42 1/2

NOTES:
1. All dimensions are in inches (±1/4 in.).
2. Any modifications to product specifications by any person are subject to acceptance of the factory. Product specifications are subject to change without notice.
3. Right hand shown, left hand opposite.
4. Hanger rods, which are field-supplied, are shown for reference only.
5. “C” dimension is measured from coil side of the unit.

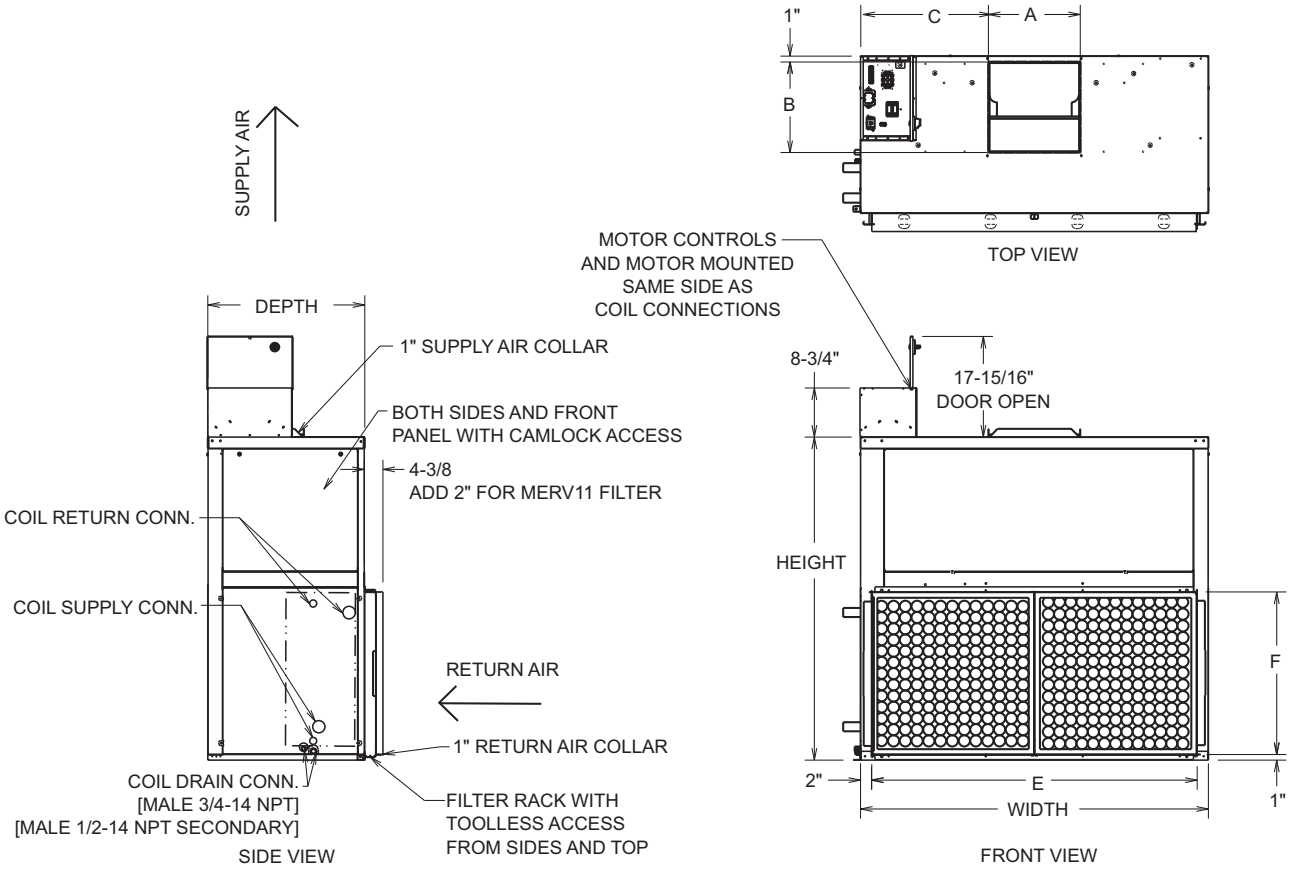
Fig. 4 — Unit Dimensions — 42BHE Fan Coil Base Unit with Electric Heat Option



UNIT 42BVE	DIMENSIONS (in.)								
	Fan Size	Depth	Width	Height	Supply Duct			Return Duct	
					A	B	C	E	F
06	9 x 4	20	28	36 1/2	7 1/8	10 1/2	16 3/4	24	16 1/2
08	9 x 6	20	28	36 1/2	8 1/2	10 1/2	15 1/4	24	16 1/2
10	10 x 4	22	37	39 3/8	7 1/8	11 5/8	24 1/2	33	18 1/4
12	10 x 7	22	37	39 3/8	10	11 5/8	21 1/2	33	18 1/4
16	11 x 10	22	47	39 3/8	13 3/8	12 3/4	16 3/4	43	18 1/4
20	12 x 9	24	48	45 1/8	12 1/2	13 3/4	17 3/4	44	20 3/4
30	12 x 12	28	48	54 1/4	15 7/8	13 3/4	16	44	29
40	15 x 12	28	62	57 5/8	16 1/2	16 1/8	22 3/4	58	29

NOTES:
1. All dimensions are in inches (±1/4 in.).
2. Any modifications to product specifications by any person are subject to acceptance of the factory. Product specifications are subject to change without notice.
3. Left hand shown, right hand opposite.
4. Drain pan removal is on the piping side of the unit.
5. “C” dimension is measured from coil side of the unit.

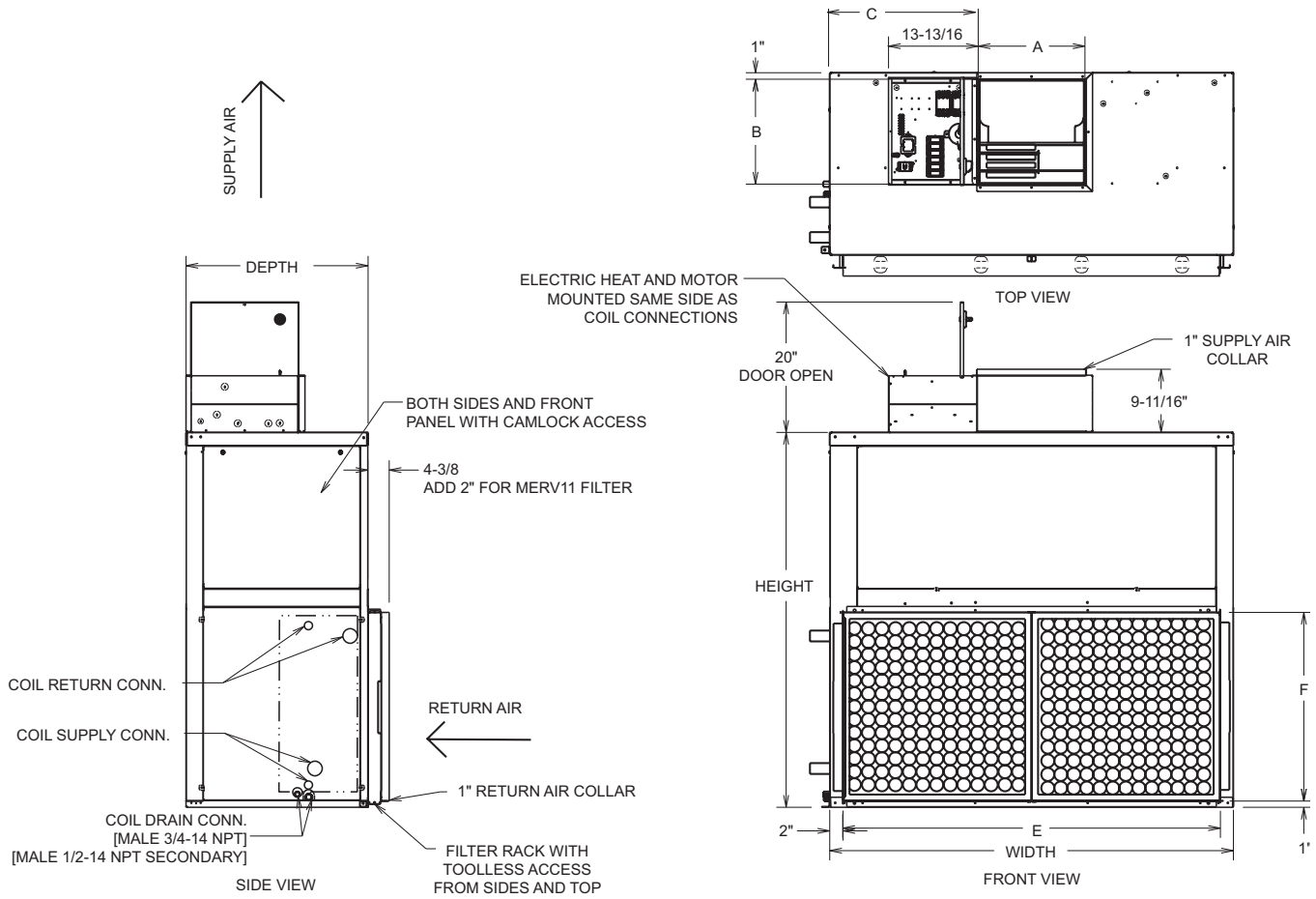
Fig. 5 — Unit Dimensions — 42BHV Fan Coil Base Unit (No Controls)



UNIT 42BVE	DIMENSIONS (in.)								
	Fan Size	Depth	Width	Height	Supply Duct			Return Duct	
					A	B	C	E	F
06	9 x 4	20	28	36 1/2	7 1/8	10 1/2	16 3/4	24	16 1/2
08	9 x 6	20	28	36 1/2	8 1/2	10 1/2	15 1/4	24	16 1/2
10	10 x 4	22	37	39 3/8	7 1/2	11 5/8	24 1/2	33	18 1/3
12	10 x 7	22	37	39 3/8	10	11 5/8	21 1/2	33	18 1/3
16	11 x 10	22	47	39 3/8	13 3/8	12 3/4	16 3/4	43	18 1/3
20	12 x 9	24	48	45 1/8	12 1/2	13 3/4	17 3/4	44	20 3/4
30	12 x 12	28	48	54 3/16	15 7/8	13 3/4	16	44	29
40	15 x 12	28	62	57 5/8	16 7/16	16 1/8	22 3/4	58	29

NOTES:
1. All dimensions are in inches (±1/4 in.).
2. Any modifications to product specifications by any person are subject to acceptance of the factory. Product specifications are subject to change without notice.
3. Left hand shown, right hand opposite.
4. Drain pan removal is on the piping side of the unit.
5. “C” dimension is measured from coil side of the unit.

Fig. 6 — Unit Dimensions — 42BHV Fan Coil Base Unit with Motor Control Option



UNIT 42BVE	DIMENSIONS (in.)								
	Fan Size	Depth	Width	Height	Supply Duct			Return Duct	
					A	B	C	E	F
06	9 x 4	20	28	36 1/2	8 7/8	10 7/8	16 3/4	24	16 1/2
08	9 x 6	20	28	36 1/2	8 7/8	10 7/8	15 1/4	24	16 1/2
10	10 x 4	22	37	39 3/8	10 3/8	12	24 1/2	33	18 1/3
12	10 x 7	22	37	39 3/8	10 3/8	12	21 1/2	33	18 1/3
16	11 x 10	22	47	39 3/8	13 7/8	13	16 3/4	43	18 1/3
20	12 x 9	24	48	45 1/8	13	14 1/8	17 3/4	44	20 3/4
30	12 x 12	28	48	54 3/16	16 1/4	14 1/8	16	44	29
40	15 x 12	28	62	57 5/8	16 3/4	16 3/8	22 3/4	58	29

NOTES:
1. All dimensions are in inches (±1/4 in.).
2. Any modifications to product specifications by any person are subject to acceptance of the factory. Product specifications are subject to change without notice.
3. Left hand shown, right hand opposite.
4. Drain pan removal is on the piping side of the unit.
5. “C” dimension is measured from coil side of the unit.

Fig. 7 — Unit Dimensions — 42BHV Fan Coil Base Unit with Electric Heat Option

Step 4 — Prepare Unit — Be sure that unit power requirements match available power source. Refer to unit nameplate and wiring diagram. Check all tags on unit to determine if any shipping screws are to be removed. Remove screws as directed.

Step 5 — Position Unit

1. The air handler has $^5/_8$-in. knockouts in each corner of the top and bottom panels for suspension rods to pass through. Be sure to support the unit from underneath until mounting is complete.
2. Install vibration isolators as shown in Fig. 1 (recommended for all sizes). Field-supplied and field-installed accessories must be independently supported or suspended. It is recommended that a trapeze suspension be used on 42BHE size 30 and 40 units. (42BHE size 30 and 40 units with seismic compliance option *require* a trapeze suspension. See the section 42BHE Units with Seismic Compliance Option.)
3. 42BHE Units with Seismic Compliance Option (optional for other installations) — For 42BHE (horizontal) units with seismic compilance option, a threaded-rod trapeze suspension is required for unit sizes 30 and 40. Install the trapeze so that it does not block bottom access for filter removal. Install factory-provided seismic cable restraints. See Fig. 8 and 9.
4. 42BVE Units with Seismic Compliance Option (optional for other installations) — 42BVE (vertical) units with seismic compliance option for non-isolated mounting must be secured to a pad or base rail using factory-installed mounting brackets. Anchor hardware is field-supplied and must be Hilti Kwik Bolt TZ expansion anchors or similar carbon steel anchors tested in accordance with ACI (American Concrete Institute) 355.2 and ICC-ES (International Code Council-Evaluation Service) AC 193. See Fig. 10 for anchor size, mounting hole locations, and relevant dimensions.

   42BVE (vertical) units with seismic compliance option for isolated mounting must be mounted using the vibration isolators provided by the factory with the unit. Anchor hardware is field-supplied and must be Hilti Kwik Bolt TZ expansion anchors or similar carbon steel anchors tested in accordance with ACI 355.2 and ICC-ES AC 193. See Fig. 11 for isolated mounting locations and spring mounting details.
5. For units with mixing boxes, follow Step 9 for installation instructions.
6. To ensure proper drainage and operation, be sure unit is level. DO NOT mount the unit on a slope. The pitch of a suspended unit can change after coil is filled; recheck after filling. Drain pan has built-in slope to ensure proper drainage.
7. Sufficient clearance must be maintained for service and maintenance. Ensure that there is a minimum clearance of 24 in. on access side for motor, pulley and belt access. Filter shall be removed from side or top of the filter rack on vertical unit (42BVE) and side or bottom of the filter rack on horizontal unit (42BHE). If side access to filter is desired, the minimum clearance required is the width of the filter rack plus 6 inches.
8. Protect unit from damage from jobsite debris. Do not allow foreign material to fall into drain pan. Prevent dust and debris from being deposited on motor or fan.

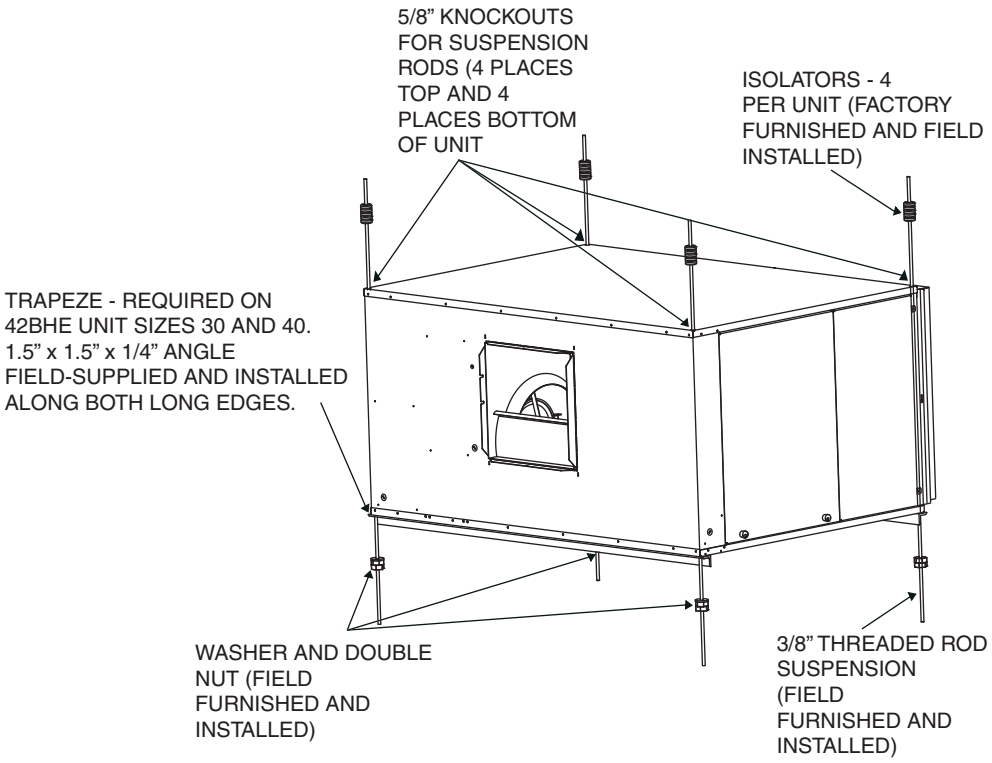
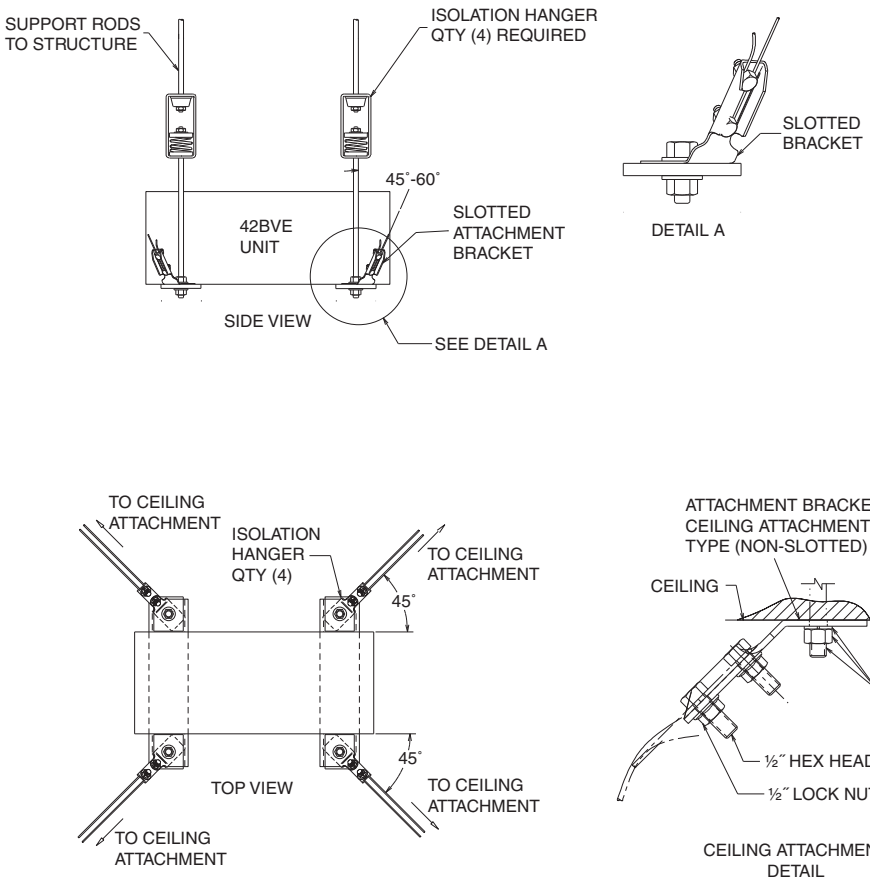
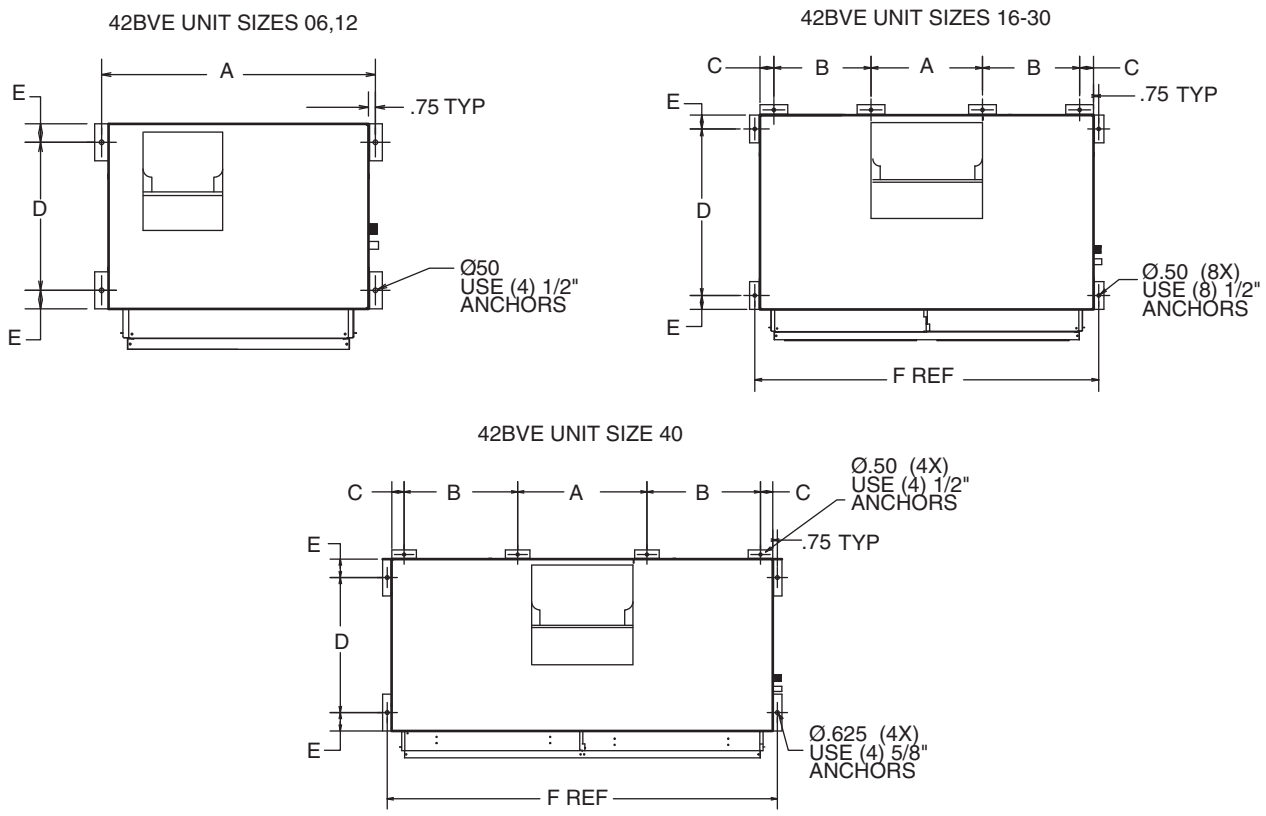

5/8" KNOCKOUTS FOR SUSPENSION RODS (4 PLACES TOP AND 4 PLACES BOTTOM OF UNIT
ISOLATORS - 4 PER UNIT (FACTORY FURNISHED AND FIELD INSTALLED)
TRAPEZE - REQUIRED ON 42BHE UNIT SIZES 30 AND 40. 1.5" x 1.5" x 1/4" ANGLE FIELD-SUPPLIED AND INSTALLED ALONG BOTH LONG EDGES.
WASHER AND DOUBLE NUT (FIELD FURNISHED AND INSTALLED)
3/8" THREADED ROD SUSPENSION (FIELD FURNISHED AND INSTALLED)

Fig. 8 — 42BHE Units with Seismic Compliance Option — Threaded Rod Suspension



NOTES:
1. Kit consists of
   4—Slotted brackets
   4—Holed Brackets
   16—Bolts
   16—Serrated flange nuts
   4—20-ft lengths of cable ($^1/_2$-in or $^1/_4$-in as required)
2. Field-torque $^1/_2$-in. lock nut to 75 ft-lb.

Fig. 9 — 42BHE Units with Seismic Compliance Option — Mounting Details, Cable Restraint Kit



42BVE Unit Size	Dimensions (in.)					
	A	B	C	D	E	F REF
06,08	29.59	N/A	N/A	16.00	2.00	N/A
10,12	38.56	N/A	N/A	18.00	2.00	N/A
16	15.06	14.00	2.00	18.00	2.00	48.56
20	15.16	14.50	2.00	20.00	2.00	49.56
30	16.06	14.00	2.00	24.00	2.00	49.56
40	21.06	18.50	2.00	22.00	3.00	63.56

Fig. 10 — 42BVE Seismic Compliance Option — Non-Isolated Mounting Details

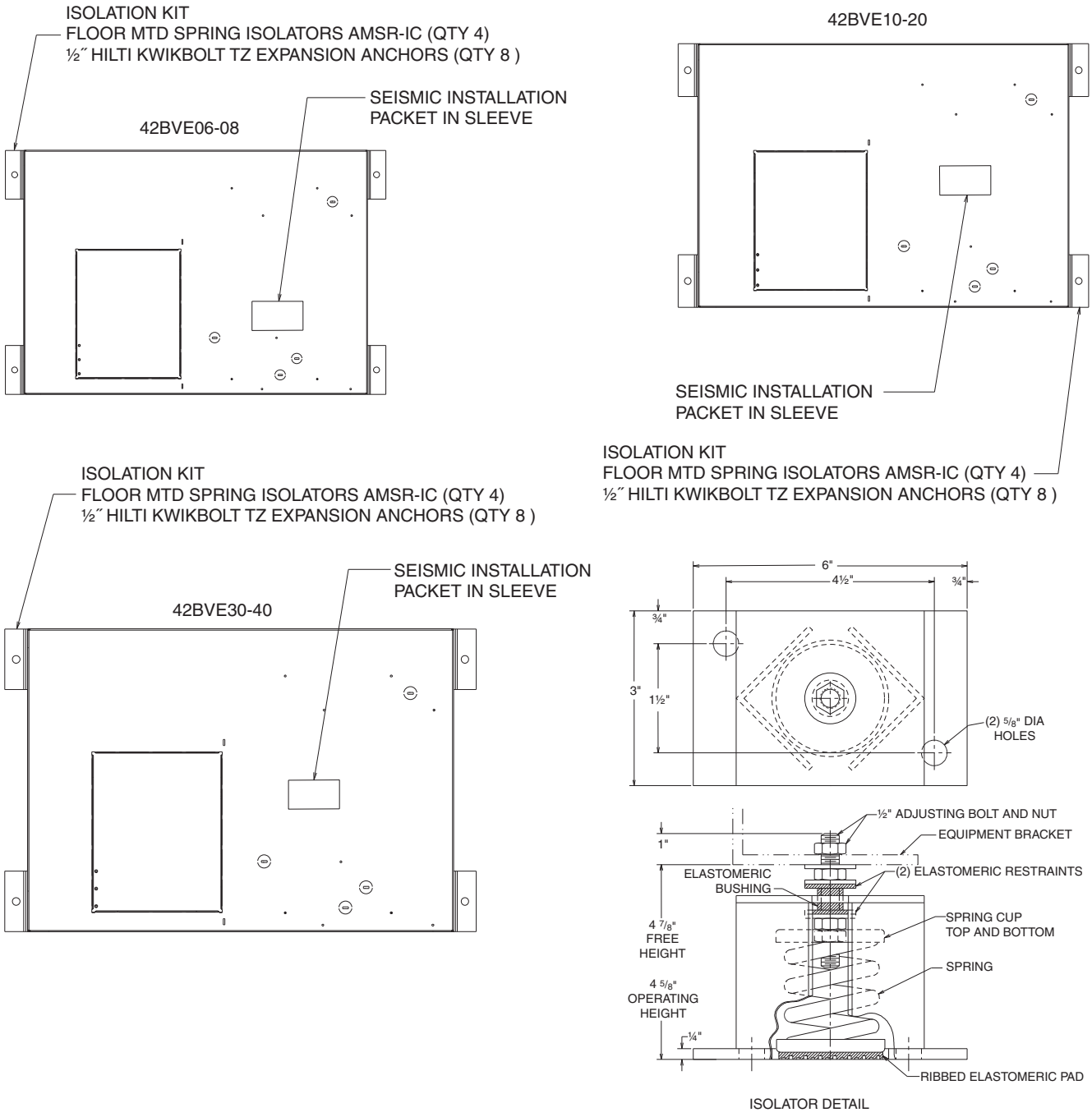


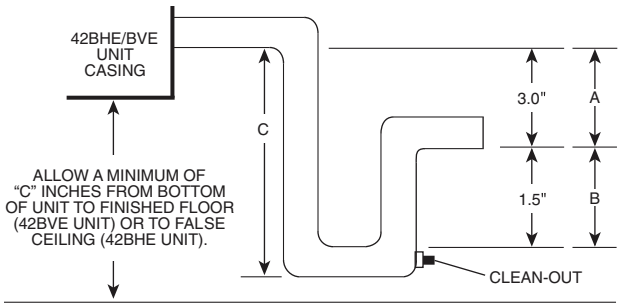
Fig. 11 — 42BVE Seismic Compliance Option — Isolation Mount Details

Step 6 — Make Piping Connections (See Table 1 and Fig. 2-7)

DRAIN — The unit has a double-sloped condensate drain pan to ensure proper drainage. The condensate drain must be at least $^3/_4$-in. copper, galvanized, black iron, or PVC piping. Install the trapped drain line in accordance with all applicable codes. Slope drain away from unit to prevent overflowing and insulate the line to prevent sweating.

Drain piping should be sloped a minimum of $^1/_8$-in. per ft away from the unit. Condensate drain must be trapped for proper drainage and odor control. The differential height of the trap inlet to outlet must be at least 1 in. wg greater than the total static pressure of the unit. The differential height of the outlet to the bottom of the trap must not be less than the total static pressure of the unit.

The 42BVE units should be installed on a pad. The height of the pad should be adequate to allow for a proper condensate trap. The condensate trap shown in Fig. 12 is for a unit with a total static pressure (TSP) of 2 in. wg with a 1-in. wg safety factor for any change in operating conditions. The A dimension must equal the system TSP plus 1 in. wg. The B dimension is one half of A, and C is the total of A + B + pipe diameter.



NOTE: Dimension C is the total of A + B + the pipe diameter.

Fig. 12 — Condensate Trap

The unit drain pan is equipped with a secondary connection that must be piped to an open-site drain. This will prevent overflow and possible building damage if the primary drain is blocked. The secondary drain connection can be capped if potential overflow will not damage the building or unit.

WATER SUPPLY/RETURN CONNECTIONS — Install piping in accordance with all applicable codes. The supply and return connections are marked on the coil stub ends with an "S" on the supply (inlet) and an "R" on the return (outlet). Blue letters mark chilled water connections, red letters indicate steam or hot water connections. Install valves in lines in accordance with valve manufacturer's instructions. Be sure valves are in proper operating position and are easily accessible for adjustment.

HYDROSTATIC TEST — When all joints are completed, perform hydrostatic test for leaks. Hydronic systems should be tested with water (some components are not designed to hold gas). If gas testing is necessary, pressure must NOT exceed 80 psig. All chilled water piping and valves not located over drain pans or drip lips must be insulated to prevent damage from sweating. Vent all coils during final preparations. (See Step 10, section 6.)

⚠ WARNING

Never pressurize unit beyond the specified test pressure. Always pressure test with an inert gas or fluid (nitrogen or clear water) to avoid possible unit damage or personal injury in the event of a leak during testing.

Check interior unit piping for signs of leakage from shipping damage or mishandling. If leaks are found, *notify your local Carrier representative before initiating any repairs*.

⚠ CAUTION

All water coils must be protected from freezing after initial filling with water. Even if system is drained, unit coils may still hold enough water to cause damage when exposed to temperatures below freezing.

INSULATION — Following the hydrostatic test, insulate all piping to unit to prevent sweating.

Table 1 — Unit Physical Data

UNIT SIZE 42BHE, BVE	06	08	10	12	16	20	30	40
NOMINAL CFM	600	800	1000	1200	1600	2000	3000	4000
42BHE OPERATING WT (lb) (no heat/ with heat)	203/234	205/236	253/287	256/290	312/346	344/380	437/474	553/590
42BVE OPERATING WT (lb) (no heat/ with heat)	200/231	202/233	243/277	247/281	289/323	351/387	436/473	522/559
FILTERS (2 in. pleated) Number...Size (in.)	1...16 1/2 x 24	1...16 1/2 x 24	1...18 1/4 x 33	1...18 1/4 x 33	2...18 1/4 x 21 1/2	2...20 3/4 x 22	2...29 x 22	2...29 x 29
Face Area (sq ft)	2.8	2.8	4.2	4.2	5.5	6.3	8.9	11.7
HYDRONIC COILS Size (in.)	15 x 20	15 x 20	15 x 29	15 x 29	15 x 39	18 x 40	27 x 40	27 x 54
Face Area (sq ft)	2.1	2.1	3.0	3.0	4.1	4.9	7.7	10.3
Fins per inch	10							
Coil Water Volume (approx. gal. per row of coil)	0.240	0.240	0.324	0.324	0.420	0.492	0.768	1.020
FANS Qty...Size (in.)	1...9 x 4	1...9 x 6	1...10 x 4	1...10 x 7	1...11 x 10	1...12 x 9	1...12 x 12	1...15 x 12
HYDRONIC COIL CONN. (in.) 8 ROW (Cooling)	1 nominal, 1.125 OD						1 1/2 nominal, 1.625 OD	
4 AND 6 ROW (Cooling)	3/4 nominal, 0.875 OD				1 nominal, 1.125 OD		1 1/2 nominal, 1.625 OD	
1 ROW (Heating)	1/2 nominal, 0.625 OD						1 1/2 nominal, 1.625 OD	
2 ROW (Heating)	1/2 nominal, 0.625 OD				1 nominal, 1.125 OD		1 1/2 nominal, 1.625 OD	
DX COIL CONN. LIQUID LINE (in.)	1/4 nominal, 0.375 OD						1/2 nominal, 0.625 OD	
DX COIL CONN. SUCTION LINE (in.)	3/4 nominal, 0.875 OD				1 nominal, 1.125 OD		1 1/2 nominal, 1.625 OD	
DRAIN CONN. SIZES (in.)	3/4 MPT							

LEGEND

DX— Direct Expansion

Step 7 — Make Electrical Connections — Refer to the unit rating plate for supply voltage, motor and heater amperage, and required circuit ampacities. (See Tables 2-4.) The unit wiring diagram shows all factory and field wiring. Most of the unit motors are dual voltage that are factory wired for a specified voltage. The motors should be checked to ensure that they are wired for the correct voltage and rotation.

Units equipped with factory-installed motor controls and disconnect will comply with NEC requirements for disconnect, motor controller and motor overload protection. Separate disconnect and motor starter are not required to comply with NEC requirements.

All field wiring should be done in accordance with all applicable local and national codes. Any factory wiring modifications without factory authorization will void all factory warranties and nullify any agency listings.

The manufacturer assumes no responsibility for any damage and/or injuries resulting from improperly installed or wired components.

Install fan switches, thermostats and other accessories in accordance with accessory manufacturer's instructions and applicable wiring diagram.

Table 2 — 42BHE,BVE Electric Heater Availability

kW	42BHE UNIT SIZE							
	06	08	10	12	16	20	30	40
1.0	●	●	—	—	—	—	—	—
1.5	●	●	●	●	—	—	—	—
2.0	●	●	●	●	—	—	—	—
2.5	●	●	●	●	●	—	—	—
3.0	●	●	●	●	●	—	—	—
3.5	●	●	●	●	●	●	—	—
4.0	●	●	●	●	●	●	—	—
4.5	●	●	●	●	●	●	—	—
5.0	●	●	●	●	●	●	—	—
6.0	●	●	●	●	●	●	●	●
7.0	—	●	●	●	●	●	●	●
8.0	—	●	●	●	●	●	●	●
9.0	—	—	●	●	●	●	●	●
12.0	—	—	—	●	●	●	●	●
14.0	—	—	—	—	●	●	●	●
15.0	—	—	—	—	●	●	●	●
16.0	—	—	—	—	●	●	●	●
18.0	—	—	—	—	—	●	●	●
19.0	—	—	—	—	—	●	●	●
25.0	—	—	—	—	—	—	●	●
30.0	—	—	—	—	—	—	●	●
35.0	—	—	—	—	—	—	—	●
39.9	—	—	—	—	—	—	—	●

LEGEND

● — Standard Offering
— — Not Offered

NOTES:
1. Stages available:
   a. Single phase: 1 to 12 kW, 1 stage only
      3 to 12 kW, 1 stage or 2 stage
   b. Three phase: 1 to 39.9 kW, 1 stage only
      4 to 39.9 kW, 1 or 2 stage
      12 to 39.9 kW, 1, 2 or 3 stage
2. Electric Heating Capacities (Btuh) = Heater kW x 3413
3. Electric Heater Amperage for Single-phase Power = (Heater kW x 1000)/Applied Voltage
   Electric Heater Amp. for 3-phase Power = (Heater kW x 1000)/(Applied Voltage x 1.73).

Table 3 — 42BHE,BVE Electric Heater Data

kW	FULL LOAD AMPS						
	Single-Phase				Three-Phase		
	115 V	208 V	240 V	277 V	208 V	240 V	480 V
1.0	8.3	4.8	4.2	3.6	2.8	2.4	1.2
1.5	12.5	7.2	6.3	5.4	4.2	3.6	1.8
2.0	16.7	9.6	8.3	7.2	5.6	4.8	2.4
2.5	20.8	12.0	10.4	9.0	6.9	6.0	3.0
3.0	25.0	14.4	12.5	10.8	8.3	7.2	3.6
3.5	29.2	16.8	14.6	12.6	9.7	8.4	4.2
4.0	33.3	19.2	16.7	14.4	11.1	9.6	4.8
4.5	37.5	21.6	18.8	16.2	12.5	10.8	5.4
5.0	—	24.0	20.8	18.1	13.9	12.0	6.0
6.0	—	28.8	25.0	21.7	16.7	14.4	7.2
7.0	—	33.7	29.2	25.3	19.4	16.8	8.4
8.0	—	38.5	33.3	28.9	22.2	19.2	9.6
9.9	—	—	—	35.7	27.5	23.8	11.9
12.0	—	—	—	43.3	33.3	28.9	14.4
14.0	—	—	—	—	38.9	33.7	16.8
15.0	—	—	—	—	41.6	36.1	18.0
16.0	—	—	—	—	—	38.5	19.2
18.0	—	—	—	—	—	—	21.7
19.9	—	—	—	—	—	—	23.9
25.0	—	—	—	—	—	—	30.1
30.0	—	—	—	—	—	—	36.1
35.0	—	—	—	—	—	—	42.1
39.9	—	—	—	—	—	—	48.0

Table 4 — Motor Performance Data (Full Load Amps)

VOLTAGE V-Ph-Hz	Nominal HP								
	1/4	1/3	1/2	3/4	1	1 1/2	2	3	5
115-1-60	5.2	6.0	8.6	13.3	14.4	—	—	—	—
208-1-60	3.0	3.6	4.8	6.6	7.4	9.4	11.0	—	—
230-1-60	2.5	3.0	4.2	5.1	6.0	9.0	10.9	—	—
277-1-60	2.1	2.5	3.6	5.1	5.4	8.5	8.0	—	—
208-3-60	—	—	2.4	3.6	3.8	6.0	6.5	8.2	14.0
230-3-60	—	—	2.2	3.0	3.2	4.8	6.2	8.0	13.2
460-3-60	—	—	1.1	1.5	1.9	2.8	3.1	4.0	6.6

NOTES:
1. Motor full load amps refer to National Electric Code (NEC) amps; actual motor nameplate amps may vary.
2. NEC data extrapolated for 277 v.
3. Motors are open drip proof, ball bearing, single speed, 1750 rpm rated at continuous duty, 104 F ambient with reversible rotation.
4. 5HP motors available only on size 40 units.

SERVICE SWITCHES: — The service switch is an On/Off switch on incoming power supply to unit. Proper amperage load must be determined before switch can be selected. The range of the fused or non-fused service switch is 0 to 40 amps.

MCA (minimum circuit amps) = 1.25 x sum of all loads.

MFS (maximum fuse size = MCA rounded up to next available fuse size.

Step 8 — Make Duct Connections — Install all ductwork to and from unit in accordance with all applicable codes. Duct construction must allow unit to operate within the limits of the unit external static pressure as shown on job submittals.

Units designed to operate with ductwork may be damaged if operated without the intended ductwork attached. Units configured to bring in outside air should have some method of low temperature protection to prevent coil freeze-up.

Insulate all ductwork as required. Use flexible connections to minimize duct-to-duct alignment problems and noise transmission where specified. Acoustic lining of main supply and return duct should be considered for noise control. Noise transmission will be reduced when return grilles are located as far as possible from the unit.

Install ductwork, accessory grilles, and plenums so that they do not restrict access to filter.

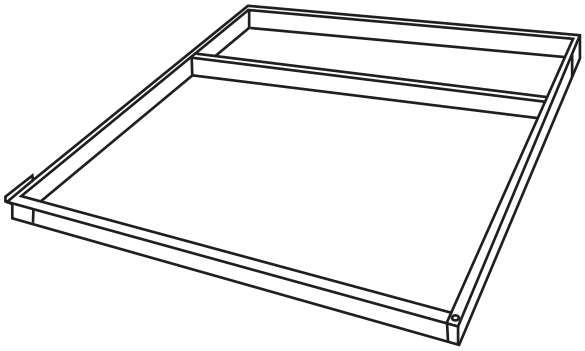
NOTE: Prevent dirt, dust, and debris from settling in unit.

Step 9 — Install Mixing Box — Mixing boxes are preassembled from the factory. A linkage kit consisting of 2 crankarms, 2 swivels, and either a 25-in. (unit sizes 06-16) or a 34-in. (unit sizes 20-40) length of $^{5}/_{16}$ in. rod is provided for field installation of the actuator.

To install the mixing box:

1. Assemble the mixing box base rails using the provided hardware. The base rails are marked with identifying letters. See Fig. 13.
2. Place unit on the base rails. Install mixing box and attach to base rails using the no. 8 x $^{1}/_{2}$ in. fasteners at the locations shown in Fig. 14A (42BHE units) or Fig. 14B (42BVE units).
3. Seal the connection between the mixing box and the return duct flange.

NOTE: Be careful not to tape or seal the filter access panel.



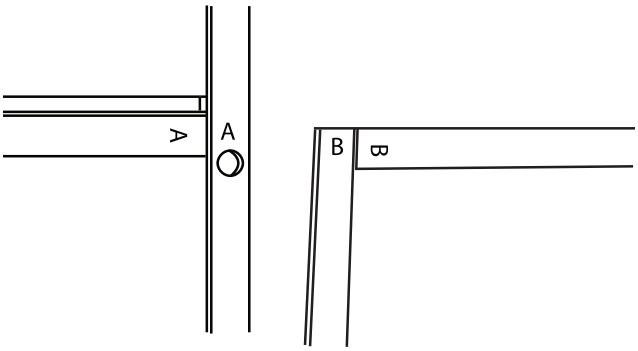


Fig. 13 — Assemble Base Rails

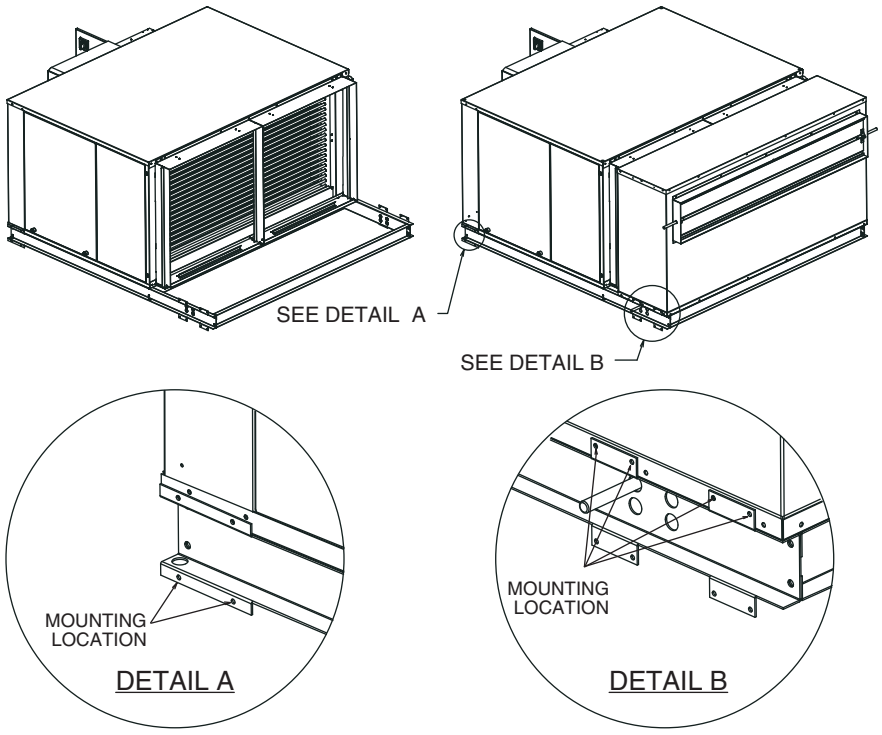


Fig. 14A — Install Mixing Box — 42BHE units

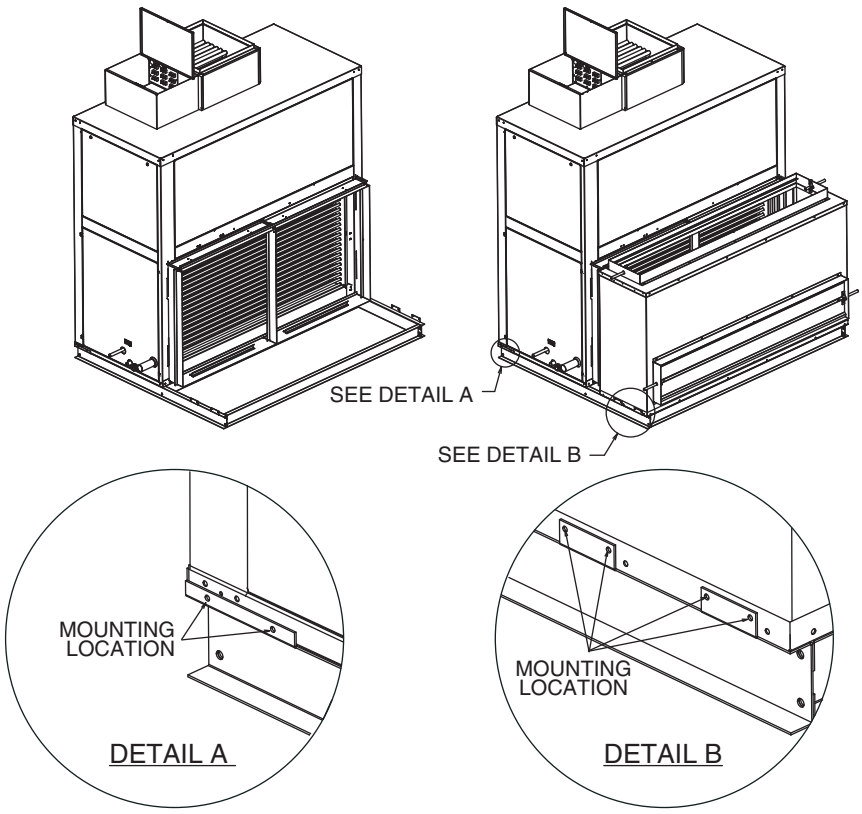


Fig. 14B — Install Mixing Box — 42BVE units

Step 10 — Make Final Preparations

1. TURN POWER OFF. (Open unit electrical disconnect.)
2. Clean unit thoroughly. Remove dirt and debris from unit, especially drain pan, drain line, motor and fan. Pour water into drain pan to check that drain operates properly.
3. Rotate fan wheel by hand to be sure wheel is free and does not rub housing. The 42BHE,BVE belt drives are factory set at the speed required for the design specifications specified when ordered. These drives may be adjusted to achieve different speed by qualified personnel during air system balancing. Refer to the Start-Up section before energizing the unit. Check fan belt tension as described in the Service section which follows.
4. Check that a clean air filter of proper type and size is installed in unit filter rack after commissioning. See Table 1 and Clean or Replace Air Filters section. Do NOT operate unit without filter.
5. Turn on water supply. Open all valves. Check for leaks. Recheck pitch of suspended unit.
6. Vent all air from unit coil and related piping. If air vent is manual, release air by turning air vent screw $1^1/_2$ turns counterclockwise with screwdriver. When a steady stream of water begins to escape, close valve. If vent is automatic, trapped air will be released automatically. Vent releases air slowly, usually dripping water into the drain pan in the process.

⚠ CAUTION

The air vent provided on the unit is not intended to replace the main system vents and may not release air trapped in other parts of the system. Inspect the entire system for potential air traps and vent those areas as needed. Some systems may require repeated venting over a period of time to properly eliminate air from the system. Failure to do so could result in equipment damage.

7. TURN POWER ON. (Close unit electrical disconnect.)

   NOTE: Be sure power is off before making any adjustments inside unit.
8. Check fan and motor operation. Motor to fan wheel rotation must match airflow direction shown in Fig. 2-7.

   Set unit air delivery for required blower rpm per job submittals or product data catalog. Adjust fan motor pulley (Fig. 15) as follows:
   a. Loosen setscrew on movable pulley flange.
   b. Screw flange toward fixed flange to increase fan speed and away from fixed flange to decrease speed.
   c. Reset setscrew.
   d. Check belt tension. The drive belt should be tensioned to allow $^1/_2$ to $^3/_4$-in. deflection at the midpoint between pulleys with moderate pressure.

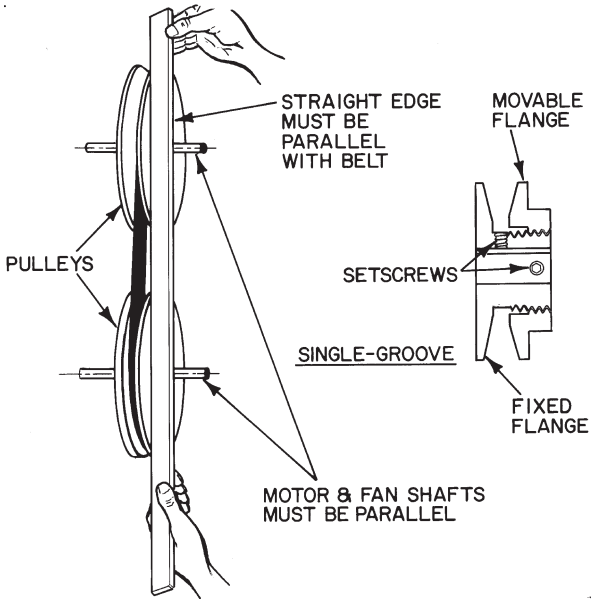


Fig. 15 — Fan Pulley Adjustments

Inspect the unit for loose wires, correct blower wheel operation, and loose or missing access panels or doors. Unless otherwise required for balancing and start-up procedures, units should not be operated without proper ductwork, supply/return air grilles, and access panels and/or doors in place.

⚠ CAUTION

Do not exceed motor nameplate FLA (full load amps). Operator must confirm motor current draw before putting unit into service and again after air balancing the system. Failure to do so could result in equipment damage.

START-UP

⚠ CAUTION

Follow all safety considerations previously outlined. Failure to do so could result in personal injury or equipment damage.

Start-up procedures vary depending upon the time of year (summer or winter) and building characteristics (new building or old building, occupied or unoccupied, etc.).

Start-up in the Cooling mode requires that proper care be given to avoid condensation problems. Condensation forms on surfaces that are colder than the dew point of the surrounding air. If a unit is started and is fed low-temperature chilled water in a hot, humid setting, condensation will form on many parts of the unit. In order to avoid excessive condensation, water of higher temperature should be used, approximately 65 to 70 F. Also, the building should be as completely enclosed as possible and outside-air supply fans and toilet and kitchen exhaust fans should be off.

As the building temperature drops, the chilled water temperature can gradually be reduced until it reaches 50 F. At this point, the outside-air fans can be turned on. When the chilled water temperature is reduced to its design point, the exhaust fans can be turned on.

Air System Balancing — All ductwork, air grilles, filters, and access doors and panels must be complete and connected to establish actual system operating conditions before air system balancing procedures are started.

NOTE: Units are factory set for system designed operating conditions specified at the time of order entry.

Proper belt drive alignment and tension must be maintained when adjusting the unit fan drive speed. The drive belt tension should not exceed $^3/_{16}$-in. deflection midway between the pulleys under 8 lb of force. New belts tend to stretch during their initial period of use. After 5 days of operation, check and readjust belt tension and pulley alignment if necessary. Failure to do so may result in excessive unit noise and/or premature belt/bearing failure.

SERVICE

⚠ WARNING

Lock open and tag electrical disconnect before servicing equipment. Failure to do so could result in personal injury or death.

Clean Coils

1. Brush between coil fins with a stiff wire brush. Do not bend fins. Follow up by cleaning with a vacuum cleaner. If coil is cleaned with an air hose, take care not to drive dirt and dust into other components.
2. Install clean air filters.

Check Drain — Check drain pan, drain line and trap at start of each cooling season. A standard type pipe cleaner for $^3/_4$-in. ID pipe can ensure removal of obstructions so that condensate is carried away. Check the drain line at filter cleaning time during the cooling season.

Fan and Motor Bearings — Fan shaft bearings are permanently lubricated and sealed, and need no attention. Check tag on motor for motor bearing lubrication instructions (if any). Most motors furnished with these units are permanently lubricated.

Align Pulley — Loosen pulley setscrew(s). Align pulleys by using a straight edge as shown in Fig. 15. Retighten setscrew(s).

Adjust Fan Belt Tension — Loosen fan motor base mounting screws. Reposition the motor so that belt deflection does not exceed $^3/_{16}$-in. at belt midpoint under 8 lb of force. Retighten motor mounting screws and recheck fan belt tension.

Clean Fan Wheel — Use a stiff brush or vacuum to remove dirt and debris from scroll. Wipe all fan surfaces with a damp cloth.

Clean or Replace Air Filters — At the start of each cooling season and after each month of operation (more or less depending on operating conditions), replace unit filter.

To remove filter, slide filter out of filter rack from either side of return-air duct collar.

THROWAWAY OR PLEATED FILTER — Replace filter with a good quality filter of the size shown in Table 1. Do not attempt to clean and reuse a disposable filter.

Recommended Maintenance

Quarterly

- Lubricate motor and blower bearings (if applicable)
- Check and adjust belt tension
- Change air filter

Annually — in addition to quarterly maintenance

- Inspect all wiring connections and tighten if necessary
- Check and tighten set screws on pulleys
- Clean coil and drain pan
- Clean blower wheel as needed

TROUBLESHOOTING

Excessive Condensation on Fan Coil Unit Parts — Excessive condensation can be caused by running chilled water through a fan coil unit with its fan off. If fan cycling control is used, a water flow control valve should be installed to shut off the water when the fan stops.

The following two practices will also help avoid condensation problems:

1. Continuous fan operation with motorized chilled water valve controlled by thermostat.
2. Continuous fan operation with thermostat control to switch fan from high to low speed (instead of switching it off).

Motor Overload — The following are causes and remedies for motor trip-out on overload:

Cause: Fan delivers too much air because external static pressure is lower than the design pressure.

Remedy: Reduce fan speed by adjusting motor pulley or changing fan shaft pulley to larger diameter.

Cause: Air temperature across fan motor is too high (heating mode).

Remedy: Check ambient temperature on motor's nameplate. Compare to actual air temperature at the motor or at the fan discharge. If motor's nameplate lists an ambient temperature of 104 F and the actual air temperature is higher, either lower the air temperature or obtain a special motor rated for high ambient temperatures.

© Carrier Corporation 2013

INITIAL START-UP CHECKLIST
FOR AIRSTREAM™ 42BHE,BVE06-40 SYSTEM FAN COIL AIR CONDITIONERS
(Remove and use for job file.)

START-UP CHECKLIST

The following is a checklist to be completed before start-up:

1. General visual unit and system inspection	☐ Yes	☐ No
2. Check that unit is level	☐ Yes	☐ No
3. Record electrical supply voltage	☐ Yes	☐ No
4. Check all wiring for secure connections	☐ Yes	☐ No
5. Verify with straight edge alignment of motor and blower pulleys	☐ Yes	☐ No
6. Tighten all set screws	☐ Yes	☐ No
7. Confirm V-belt is properly tightened	☐ Yes	☐ No
8. Check condensate drain connection	☐ Yes	☐ No
9. Verify trap is deep enough	☐ Yes	☐ No
10. Prime the trap with water	☐ Yes	☐ No
11. Check supply and return water connections for leaks	☐ Yes	☐ No
12. Fill systems with water by opening supply ball valve and control valve	☐ Yes	☐ No
13. Open air vent on top of coil to vent air out of system	☐ Yes	☐ No
14. Open return ball valve	☐ Yes	☐ No
15. Engage power only long enough to verify proper blower rotation	☐ Yes	☐ No
16. Check all ductwork and grilles in place	☐ Yes	☐ No
17. Check all unit panels and filters in place	☐ Yes	☐ No
18. Start fans, pumps, chillers, etc.	☐ Yes	☐ No
19. Check for overload conditions of all units	☐ Yes	☐ No
20. Check all ductwork and units for air leaks	☐ Yes	☐ No
21. Balance water systems, as required	☐ Yes	☐ No
22. Balance air systems, as required	☐ Yes	☐ No
23. Record all final settings for future use	☐ Yes	☐ No
24. Check piping and ductwork for noise or vibration	☐ Yes	☐ No
25 Check all dampers for proper operation	☐ Yes	☐ No
26. Verify proper cooling operation	☐ Yes	☐ No
27. Verify proper heating operation	☐ Yes	☐ No
28. Reinstall all covers and access panels	☐ Yes	☐ No
29. Verify proper condensate drainage	☐ Yes	☐ No

COMMENTS:

SIGNATURES:

Start-up
Technician_____Date_____

Customer
Representative _____Date_____

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE

© Carrier Corporation 2013

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

Catalog No. 04-53420009-01 Printed in U.S.A. Form 42B-4SI Pg CL-2 11-13 Replaces: 42B-3SI